

## Two Apparently Hitherto Undescribed Species of *Xiphidium* from the Salt Marshes of the Atlantic Coast of the United States (Orthop.).

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(Plates VIII and IX.)

In the salt marshes of southern New Jersey (Cape May County) I have taken examples of two species of *Xiphidium*, which, so far as I have been able to ascertain from the literature and an examination of the collections in the Philadelphia Academy of Natural Sciences, appear not to have been hitherto recognized as valid species. Specimens of the present species from New Jersey were included in the Academy collection with *X. brevipenne*, while among some Florida specimens referred with a query to *X. nigropleurum* Bruner, were examples of what appear to be larger geographical races of both the new species. The following measurements and descriptions are based on New Jersey, and in the case of *X. spartinae* on Massachusetts material also. The Massachusetts specimens were taken in a small salt marsh at Wood's Hole.

### *Xiphidium spartinae* n. sp. (Plate VIII).

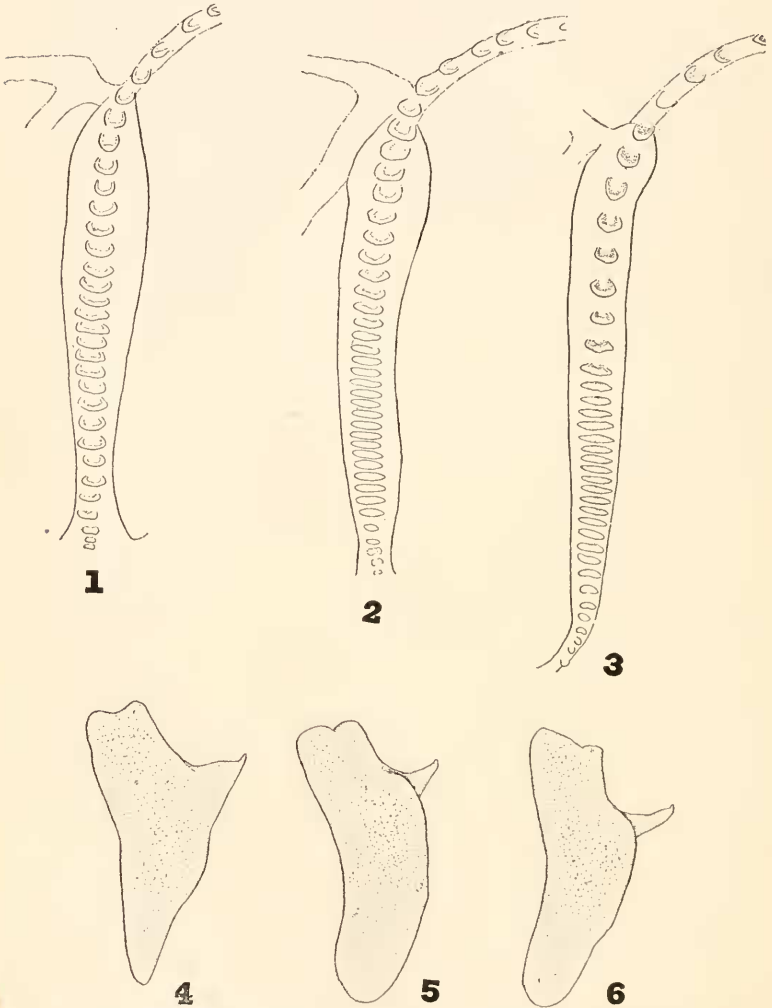
*Measurements*: Male—Length from fastigium to the tip of the supra-anal plate, 10.8-13.5 mm.; to the end of the pronotum, 4-5 mm.; to the tips of the tegmina, 10-14, mostly 11-12 mm.; length of pronotum, 2.3-3.0 mm.; of tegmina, 6.0-10.8, mostly about 7.0 mm.; of posterior femora, 8.2-10.5 mm.; of cerci, 1.5-1.8 mm.

Female—Length from fastigium to tip of supra-anal plate, 11-15 mm.; to the end of the pronotum, 4.3-5.5 mm.; to the tips of the tegmina, 9.5-12.0 mm.; to the tip of the ovipositor, 18-22 mm.; length of pronotum, 2.5-3.0 mm.; of tegmina, 5.5-8.0, mostly 7.0 mm.; of posterior femora, 9.2-11.2 mm.; of ovipositor (measured from the base of the subgenital plate) 8.2-11.0 mm. 14

*Structural Characters*: Closely resembling *X. brevipenne* Scudder in general size and proportions, but rather more slender and graceful than that species. Fastigium of the vertex distinctly, though slightly, elevated above the plane of the occiput; when viewed from above barely constricted in the preocular region, slightly swollen in front, its sides viewed from above subparallel, about one-third as wide in its broadest part as the interspace between the eyes, its front margin convexly truncate, extending in front of the eyes a distance equaling about

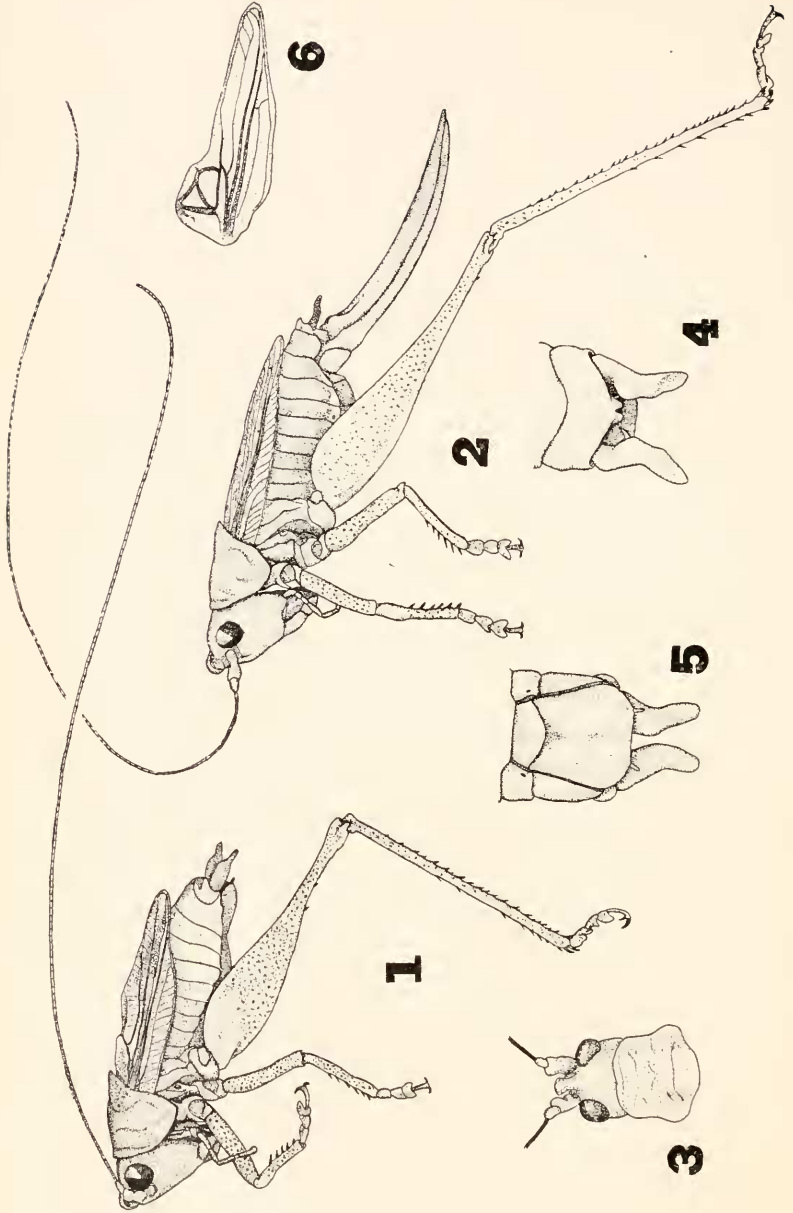
two-thirds the antero-posterior diameter of the eyes; viewed from in front the facial portion of the vertex is elongate-triangular, about one and a third times deeper than wide, its apex separated from the apex of the facial fastigium by a narrow suture.

Disk of the pronotum with its anterior margin shallowly excavate,

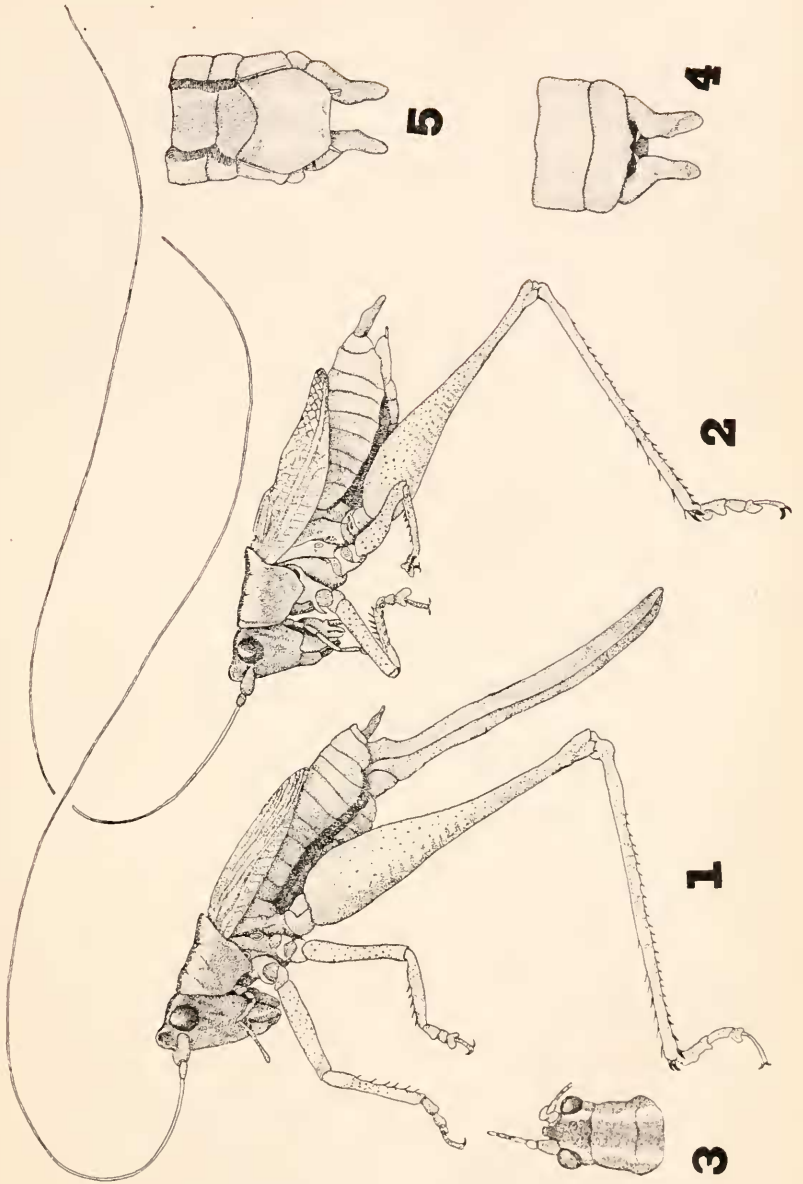


Figs. 1-3.—Left stridulating veins of *X. brevipenne* (1), *spartinae* (2) and *nigropleuroides* (3).  
Figs. 4-6.—Left cerci of *X. brevipenne* (4), *spartinae* (5) and *nigropleuroides* (6).





XIPHIDIUM SPARTINAE—FOX.



XIPHIDIUM NIGROPLEUROIDES—FOX.



its hind margin rotundo-truncate; lateral lobes nearly as deep as long, their antero-ventral borders barely, if at all, sinuate, their posterior margins shallowly sinuate, the antero-ventral angle inconspicuous, the ventral angle rounded, almost forming a right angle.

Tegmina in the male almost or quite reaching the tip of the abdomen, rarely exceeding it and only exceptionally surpassing the tips of the cerci (one individual, Ocean View, N. J.); in the female covering from slightly more than half to nine-tenths, usually three-fourths, of the abdomen; those of the male usually from two and a half to two and two-thirds the length of the pronotum, very rarely as much as three and six-sevenths times the length of the latter; those of the female shorter, mostly slightly more than twice the length of the pronotum, occasionally approaching in length those of the male; tegmina surpassing the wings by about one-fifth of their length, narrowly rounded at the tips, the veins and cross-veins distinct, but not unusually prominent. The tympanal area (Plate VIII, Fig. 6) is rather conspicuous and is distinctly broader and slightly longer than the same area in *X. brevipenne*; the stridulating ridge of the upper tegmina is stout, bearing numerous (about 40) teeth, which are evenly spaced on the outer half of the ridge but densely crowded together on its inner half. (Text-figures 1, 2.)

Anterior tibiae with usually six pairs of spines below, rarely with five. Posterior femora usually with one or two minute spines on their under sides, less frequently with none and still more rarely with as many as four; the genicular lobes terminate each in a minute spine with an additional inconspicuous subterminal spine below. Anterior tibial spines confined to the distal half of the tibiae.

The supra-anal plate of the male with its hind margin mesially produced and narrowly incised, cerci (Plate VIII, 5 and 4, also text-figure 5) moderately slender, curved, apically compressed, their tips rounded, rather blunt; a prominent swelling is present on the inner margin of each not far from the base and overlying the insertion of the tooth. Tooth interno-ventral, relatively short, but stout and when *in situ* usually invisible from above. Subgenital plate exceeding the base of the cercal tooth, its sides first diverging and then converging toward the hind margin (Plate VIII, Fig. 5), which is concavo-truncate with arched sides. Styles short. Cerci exceeding the subgenital plate by three-fourths the length of the latter.

Supra-anal plate of the female short, equilaterally triangular, about half as long as the cerci. Cerci about 1.2 mm. long, slender, compressed and rounded at the tip, slightly sinuate on their lower sides near their tips, the dorsal side less distinctly sinuate. Ovipositor distinctly, though gently, curved, the tip acute, formed by the upper division, the tip of the ventral division terminating immediately behind the extreme

tip of the upper division, the latter slightly less than twice the depth of the upper division. Ovipositor at least five-sixths the length of the posterior femora, frequently longer and sometimes nearly equaling them, surpassing their tips by an interval varying between one-fourth and one-half its length, and surpassing the abdomen by one and one-third to one and three-fifths the length of the latter. Subgenital plate trigonal, not surpassing the ninth abdominal segment, rounded apically.

*Coloration*: In the vast majority of specimens the general color is a clear grass-green with a more or less conspicuous orange tip to the abdomen and green cerci. Less frequently light brown individuals are taken in which the orange tip of the abdomen is duller and the cerci a pale olive. The following descriptions are based on the typical green race.

Male.—General color in life a bright, shiny grass-green with the terminal half of the abdomen usually of a conspicuous light orange hue; tegmina clear, slightly brownish with more or less of a trace of greenish at the apex, considerably clearer than in *X. brevipenne* and with scarcely a sign of the chestnut usually so marked in that species; cerci a bright green, except in brown individuals in which they are pale olive; dorsal stripe of the occiput and pronotum vandyke-brown, darkest on the occiput, margined laterally with an indistinct streak of yellowish, which on the pronotum shades into the green of the lateral lobes; dorsal stripe of the abdomen much paler, narrowed posteriorly and merging into the orange of the tip of the abdomen. All femora green with numerous reddish-brown dots. Hind tibiae dusky-green. Tarsi, brown.

Female.—Much like the male, but with the orange more restricted, confined to the extreme tip of the abdomen and the base of the ovipositor; cerci, green. On the abdomen the dorsal stripe is bordered laterally by a streak of greenish-yellow, which is cut off from the green of the sides by an interrupted band or series of blotches of pale brown.

*Distribution*: In southern New Jersey and at Wood's Hole I have taken this species exclusively in salt marsh, where it is abundant on the short *Spartinas* covering the tidal flats. Its preference for these maritime grasses led me to select the specific name, *spartinae*, here applied to it. Less frequently it may be found on the "black grass," *Juncus gerardi*, which forms one of the characteristic plants of the lowlands bordering the marshes on the upland side. Only rarely does it appear to stray inland and then only to that part immediately adjoining the salt marsh.



*Comparison with other species:* The present species appears to have most points in common with the following three species: *X. brevipenne*, *X. nemorale* and *X. nigropleurum*.

From *X. brevipenne* the new type may be distinguished by (1) the curved ovipositor; (2) the wider tympanum of the male tegmina; (3) the entirely different form of the cerci of the male (cf. text-figures 4 and 5); (4) the more prominent internal tuberosity of the male cercus; (5) the invisibility of most of the cercal tooth when viewed from above while in its usual position; (6) the form of the cercal tooth which is relatively slender and tapering, not swollen and obtuse as in *brevipenne*; (7) the usual, though not invariable, presence of sub-femoral spines on the hind femora; (8) the prevalence of orange rather than chestnut on the tip of the abdomen; (9) the green, instead of brown, cerci and (10) the almost total absence of chestnut from the tegmina.

From *X. nemorale* Scudder, this species differs in (1) its smaller size and slenderer form; (2) the narrower and more elevated fastigium of the vertex; (3) the relatively longer tegmina, especially in the male; (4) the less prominent veins and veinlets of the tegmina; (5) the greater difference in proportions of the tegmina and wings, the latter in *spartinae* being considerably shorter than the tegmina, while in *nemorale* they are only slightly shorter; (6) the usual presence of sub-femoral spines; (7) the less pronounced curve of the ovipositor; (8) the form of the sub-genital plate of the female, which is more truncate in *nemorale* than in *spartinae*; (9) the slenderer tips of the tegmina; (10) the generally green instead of brown color; (11) the green, instead of brown, cerci of the male.

(NOTE: These comparisons are based upon examples of *X. nemorale* in the collection of the Academy of Natural Sciences).

From *X. nigropleurum* Bruner, *spartinae* differs in its (1) smaller size and slenderer form; (2) its shorter hind femora and (3) tegmina; (4) the curved ovipositor which is always distinctly shorter than the body; (5) the apparent absence of